

**2001**

B1. Use the Euclidean algorithm to find integers  $x$  and  $y$  such that  $149x + 139y = 1$  4 marks

**2007**

7. Use the Euclidean algorithm to find integers  $p$  and  $q$  such that  $599p + 53q = 1$  4 marks

**2009**

10. Use the Euclidean algorithm to obtain the greatest common divisor of 1326 and 14654, expressing it in the form  $1326a + 14654b$ , where  $a$  and  $b$  are integers. 4 marks

**2012**

10. Use the division algorithm to express  $1234_{10}$  in base 7. 3 marks

**2013**

5. Use the Euclidean algorithm to obtain the greatest common divisor of 1204 and 833. Expressing it in the form  $1204a + 833b$ , where  $a$  and  $b$  are integers. 6 marks

**2015**

7. Use the Euclidean algorithm to find integers  $p$  and  $q$  such that  $3066p + 713q = 1$ . 4 marks

**2017**

8. Use the Euclidean algorithm to find integers  $a$  and  $b$  such that  $1595a + 1218b = 29$ . 4 marks

**2018**

5. Use the Euclidean algorithm to find integers  $a$  and  $b$  such that  $306a + 119b = 17$ . 4

**2019**

12. Express  $231_{11}$  in base 7. 3

**Answers**

**2001** B1.  $x = 14, y = -15$       **2007**  $599p + 53q = 1$  when  $p = 10$  and  $q = -113$ .

**2009**  $210 \times 1326 - 19 \times 14654$       **2012**  $1234 = 7 \times 176 + 2$       **2013** 5. Gcd = 7  
 $176 = 7 \times 25 + 1$        $a = 9, b = -13$

**2015** 7.  $p = 10, q = -43$   
 $25 = 7 \times 3 + 4$   
 $1234_{10} = 3412_7$

**2017** 8.  $a = 13, b = -17$

**2018** 5.  $a = 2, b = -5$       **2019** 12.  $543_7$